II. In the claims:

Please cancel pending claims 1-22 and replace them with the following new claims 23-40:

Claims 1-22 Canceled.

23. (New) A method to use in a node within a network comprising a transport layer protocol providing end to end data transfer, for multicasting datagrams on a virtual ring, each node on the virtual ring being logically connected according to the network transport layer protocol to an upstream neighbor node and a downstream neighbor node through virtual connections, comprising:

sending a virtual ring datagram to the downstream neighbor node on the virtual ring;

identifying the received datagram upon receipt of the datagram;

determining if the received datagram is a token and forwarding the token to the downstream neighbor node on the identified virtual ring if the token is valid;

determining if the received datagram is a virtual ring datagram;

forwarding said virtual ring datagram to the downstream neighbor node on the identified virtual ring if the received virtual ring datagram has not been locally originated; and

removing the virtual ring datagram from the virtual ring if the received virtual ring datagram has been locally originated.

24. (New) The method of claim 23, wherein the step of determining if the received datagram is a token includes identifying the virtual ring and checking that the token has been sent by the upstream neighbor node on the identified virtual ring; and the step of determining if the reeived datagram is a virtual ring datagram includes identifying the virtual ring when a virtual datagram is received and checking that the virtual ring datagram has been sent by the upstream neighbor node on the identified virtual ring.

25. (New) The method according to claim 23, wherein a node on the virtual ring is defined as being a virtual ring manager node; the token comprises a sequence number incremented each time the token is received by the virtual ring manager node; and the step of

checking whether the token is valid comprises checking whether the token sequence number has been incremented since a last reception.

26. (New) The method of claim 25, wherein the step of checking whether the token is valid comprises executing a recovery procedure if it is determined said token is not valid .

27. (New) The method of claim 23, wherein the step of forwarding the token to the downstream neighbor node on the identified virtual ring comprises:

starting a timer and waiting for a return of the token; and

executing a recovery procedure when the timer expires, wherein receipt of a token comprises stopping the timer.

28. (New) The method of claim 23, wherein a node is selected from a group consisting of:

a computer system routing datagrams in the network, and a computer system exchanging datagrams on the network.

29. (New) The method of claim 23, further comprising a virtual ring manager node on the virtual ring to execute preliminary steps comprising:

generating a token;

setting a token sequence number of said token to an initial value;

forwarding said token to the downstream neighbor node on the virtual ring, comprising: incrementing the token sequence number; and executing a recovery procedure when a timer expires comprising:

generating a new token; and

forwarding said token to the downstream neighbor node on the virtual ring.

30. (New) The method of claim 23, wherein the token is a datagram comprising:

a header comprising:

a source address of a sending node; and

a destination address of a next node on the virtual ring;

a header comprising:

a source port; and

a destination port;

means for identifying the datagram as being a token;

means for identifying the virtual ring; and

a sequence number incremented each time the token is received by the virtual ring manager node.

31. (New) The method of claim 23, wherein each virtual ring datagram circulating on the virtual ring comprises:

a header comprising:

a source address of the sending node on the virtual ring, and

a destination address of the next node on the virtual ring;

a header comprising:

a source port; and

a destination port;

a virtual ring header comprising:

means for identifying the virtual ring datagram on the virtual ring;

means for identifying the virtual ring; and

means for identifying a node originator of the virtual datagram; and

data.

32. (New) The method of claim 25, further comprising:

maintaining and updating:

means for identifying the virtual ring;

an address of the upstream neighbor node;

an address of the downstream neighbor node; and

an address of the virtual ring manager; and

optionally maintaining and updating an address of a backup virtual ring manager.

33. (New) The method of claim 23, further comprising a preliminary step of joining the virtual ring, comprising:

sending to a virtual ring node manager node previously defined on the virtual ring, an insertion request message comprising an address of the node; and means for identifying the virtual ring; and

receiving an insertion confirmation message from the virtual ring manager node comprising an address of an upstream neighbor node; and an address of a downstream neighbor node.

34. (New) The method of claim 33, wherein the step of sending an insertion request message comprises: starting an insertion timer; wherein the step of receiving an insertion confirmation message comprises stopping the insertion timer; and wherein, if the insertion timer expires, said method comprises:

sending an insertion request message comprising:

the address of the node; and

means for identifying the virtual ring to a backup ring manager node previously defined on the virtual ring;

restarting the insertion timer;

receiving an insertion confirmation message from the backup virtual ring manager comprising:

the address of an upstream neighbor node;

the address of a downstream neighbor node; and

stopping the insertion timer.

35. (New) The method of claim 23, further comprising leaving the virtual ring comprising :

sending to a virtual ring manager node previously defined on the virtual ring, a removal request message comprising:

an address of the upstream neighbor node;

an address of the downstream neighbor node; and

an address of the node; and

receiving a removal confirmation message from the virtual ring manager.

36. (New) The method of claim 35, wherein the step of sending a removal request message comprises starting a removal timer; wherein the step of receiving a removal confirmation message comprises stopping the removal timer; and wherein, if the insertion timer expires, said method comprises:

sending to a backup ring manager node previously defined on the virtual ring, a removal request message, comprising:

the address of the upstream neighbor node;

the address of the downstream neighbor node; and

the address of the node;

restarting the removal timer;

receiving a removal confirmation message from the backup virtual ring manager; and

stopping the removal timer.

37. (New) The method according to claim 23, further comprising:

receiving from a virtual ring manager node defined on the virtual ring, a change neighbor message comprising an address selected from a group consisting of: an address of a new upstream neighbor node, an address of a new downstream neighbor node, and combinations thereof;

maintaining an address selected from a group consisting of: the address of the new upstream neighbor node, the address of the new downstream neighbor node, and combinations thereof; and

sending to the virtual ring manager node a neighbor change confirmation message.

38. (New)A computer network comprising:

at least two nodes having a transport layer protocol to provide end to end data transfer to multicast datagrams in a virtual ring;

each node on said virtual ring being logically connected to an upstream neighbour node and a downstream neighbour node through virtual connection; and

instructions for multicasting datagrams on said virtual ring comprising:

sending a virtual ring datagram to the downstream neighbor node on the virtual ring;

identifying the received datagram upon receipt of the datagram;

determining if the received datagram is a token and forwarding the token to the downstream neighbor node on the identified virtual ring if the token is valid;

determining if the received datagram is a virtual ring datagram,

forwarding said virtual ring datagram to the downstream neighbor node on the identified virtual ring if the received virtual ring datagram has not been locally originated; and

removing the virtual ring datagram from the virtual ring if the received virtual ring datagram has been locally originated.

39. (New) An article comprising:

a computer network comprising at least two nodes having a transport layer protocol to provide end to end data transfer to multicast datagrams in a virtual ring; each node on said virtual ring being logically connected to an upstream neighbour node and a downstream neighbour node through virtual connection;

a computer readable medium in said network;

instructions in said medium for multicasting datagrams on said virtual ring comprising:

instructions for sending a virtual ring datagram to the downstream neighbor node on the virtual ring;

instructions for identifying the received datagram upon receipt of the datagram;

instructions for determining if the received datagram is a token, and forwarding the token to the downstream neighbor node on the identified virtual ring if the token is valid;

instructions for determining if the received datagram is a virtual ring datagram;

instructions for forwarding said virtual ring datagram to the downstream neighbor node on the identified virtual ring if the received virtual ring diagram has not been local originated; and

instructions for removing the virtual ring datagram from the virtual ring if the received virtual ring datagram has been locally originated.

40. (New) A method to use in a node within a network comprising a transport layer protocol providing end to end data transfer, for multicasting datagrams on a virtual ring, each node on the virtual ring being logically connected according to the network transport layer protocol to an upstream neighbor node and a downstream neighbor node through virtual connections, comprising:

sending a virtual ring datagram to the downstream neighbor node on the virtual ring; said virtual ring datagram comprising:

a virtual ring identifier;

means for identifying the node originator of the virtual ring datagram; and

data;

identifying the received datagram upon receipt of the datagram;

determining if the received datagram is a token, comprising:

identifying the virtual ring;

checking whether the token is valid; and

forwarding the token to the downstream neighbor node on the identified virtual ring if the token is valid;

determining if the received datagram is a virtual ring datagram, comprising;

identifying the virtual ring; and

checking the node originator of the received virtual ring datagram;

determining if the received virtual ring datagram has not been locally originated, comprising:

processing data comprised in said virtual ring datagraml and

forwarding said virtual ring datagram to the downstream neighbor node on the identified virtual ring; and

determining if the received virtual ring datagram has been locally originated, comprising:

removing the virtual ring datagram from the virtual ring.